Unit 14
Day 4
Another form of the equation

The VERTEX form of a Quadratic Function:

$$f(x) = a(x-h)^2 + k$$

(h,k) → VERTEX

a → Tells you the "width" and whether it opens upward or downward

$y=ax^2+bx+c$ standard form

$y=a(x-h)^2+k$ vertex form

Ex1: $y=2(x-3)^2+4$

a) vertex: $(3,4)$

b) y-intercept:

$y=2(0-3)^2+4=22$

c) axis of symmetry: $x=3$

d) vertex min. or max.? min

e) value of min. or max.? $f(3)=4$

f) pt. of symmetry:

g) x-intercepts: ———

Ex2: $y=-3(x+1)^2-2$

a)

b)

c)

d)

e)

f)

g)

Ex3: $y=3x^2+6x-12$

$y=3(x^2+2x+1)-12-3$

$y=3(x+1)^2-15$

a) $(-1,-15)$

b) $y=-12$

c) $x=-1$

d) min

e) -15

f)

g) $0=3x^2+6x-12$

$0=3(x^2+2x-4)$

$x=\frac{-2\pm\sqrt{4-4(1)(-4)}}{2}=\frac{-2\pm\sqrt{20}}{2}=\frac{-2\pm2\sqrt{5}}{2}=-1\pm\sqrt{5}$

Ex4: $y=-2x^2+10x$

$y=-2(x^2-5x+\frac{25}{4})+\frac{25}{2}$

$y=-2(x-\frac{5}{2})^2+\frac{25}{2}$

a) $(\frac{5}{2},\frac{25}{2})$

b) $(0,0)$

c) $x=\frac{5}{2}$

d) MAX

e) $\frac{25}{2}$

f)

g) $(0,0),(5,0)$

Ex5: $f(x)=3x^2+7x+2$

a)
b)

c)
d)
e)
f)
g)

4.1 Another form of a Quadratic

$y = ax^2 + bx + c$ *general form*

$y = a(x-h)^2 + k$ *vertex form*

(h,k) is the vetex of the quadratic

Ex1: $y = 2(x-3)^2 + 4$

vertex:
axis of symmetry:
minimum of maximum:
value of minimum or maximum:
y-intercept:

Ex2: $y = -3(x+1)^2 - 2$

vertex:
axis of symmetry:
minimum of maximum:
value of minimum or maximum:
y-intercept:

Ex3: $y = 3x^2 + 6x - 12$

vertex:
axis of symmetry:
minimum of maximum:
value of minimum
or maximum:
y-intercept:

Ex4: $y = -2x^2 + 10x$

vertex:
axis of symmetry:
minimum of maximum:
value of minimum or maximum:
y-intercept:

HW Wksht 1-8 all